

ABSTRACT OF THE DISCLOSURE

A microchannel device is provided with a plastic substrate having a microchannel formed therein. Polyelectrolyte multilayers are disposed along selected surfaces of the microchannel. The polyelectrolyte layers comprise alternating net positively charged layers and net negatively charged layers. A microchannel lid has a surface facing the microchannel. In making the microchannel device, selected surfaces of the microchannel are alternatively exposed to solutions comprising positively charged polyelectrolytes and negatively charged polyelectrolytes to form the desired number of polyelectrolyte layers.